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PREADMISSION CERTIFICATION: IDENTIFYING VARIABLES
THAT IMPACT ON THE
APPROPRIATENESS OF PATIENT ADMISSIONS

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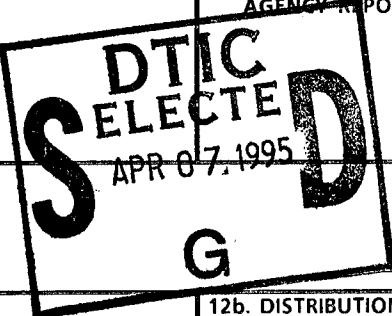
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There are many things to be thankful for in this world - good health, love, family, friendship, and security - but none of these comes easily. To paraphrase the words of Sir Winston Churchill, all things worth having require a sacrifice of blood sweat and tears. All of these are more attainable if you have support and guidance to keep you on track.

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Argentia, Newfoundland...Baylor...First male nurse corps admiral. Mom, I got my first two dreams...I'm working on the third!

ABSTRACT

In this emerging era of health care reform, emphasis has been placed on cost containment while still providing access to quality care. Shifting health care delivery from the hospital to outpatient settings and establishing preadmission criteria for patients who may require hospitalization has proved effective in reducing costs.

The Utilization Management department at Naval Medical Center San Diego (NMCSD) has proposed hiring four registered nurses to conduct preadmission certification. To determine the feasibility of the proposed hiring, this study looked at variables (age, gender, beneficiary status, proximity of home/duty, possession of third party insurance, and admitting service) to determine any potential impact on the appropriateness of patient admissions. Over a three month period, a oneway analysis of variance (ANOVA) was conducted on a sample of randomly selected patients who were admitted ($N=115$; [1,113 d.f.]). "Age" ($F=2.60$, $p = .0002$), Internal Medicine service ($F=8.576$, $p = .004$) and Gynecology service ($F=7.088$, $p = .009$) were identified as statistically significant factors which impacted the appropriateness of admissions. Because of small sample size for Internal Medicine and Gynecology admissions, these findings were subsequently rejected due to probable Type I error.

Duties outlined for precertification nurses are already being performed by nursing case managers and the third party collection nurse. The only exception was that none of these individuals review *Interqual ISD-A* criteria sets for appropriateness of admissions.

Combining these personnel under one directorate would improve communication and increase efficiency in the performance of daily duties. It is recommended that training enlisted and civilian personnel in Interqual standards, thus negating the need for precertification personnel.

Further research in tracking both third party collections and potentially avoidable days by service is encouraged. Identifying trends in inappropriate admissions by service is important in order to initiate treatment options that will increase the cost efficiency for the practice of medicine.

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PREADMISSION CERTIFICATION: IDENTIFYING VARIABLES THAT IMPACT ON THE APPROPRIATENESS OF PATIENT ADMISSIONS

CHAPTER 1

INTRODUCTION

Background

National health care reform and budget constraints for health care delivery have caused medical treatment facilities (MTFs) to reevaluate how care is provided. The Department of Defense (DoD), which historically had seemingly unlimited resources to devote to medical care, has tightened its purse-strings drastically. Many military MTFs are now perplexed on how to deliver health care without cutting services to their beneficiaries under such constraints.

The Naval Medical Center, San Diego, California (NMCSD), also known as the "Pride of Navy Medicine," has not been exempted from DoD budget cuts. Serving a beneficiary population of nearly one-half million active duty, dependent and retired members throughout Southern California, the FY 1994 budget for NMCSD has been reduced by approximately ten percent, \$15,000,000, less than projected to conduct business at FY 1993 levels. This budget reduction occurred despite designation of the NMCSD as "Lead Agent" for Region 9. NMCSD is responsible for the oversight of nine military medical treatment facilities, Navy, Army and Air Force, especially in the management of CHAMPUS

expenditures, encompassing all of Southern California and extending east to Fallon, Nevada.

Efforts to recover or recoup CHAMPUS costs have been ongoing. Additionally, there have been notable increases in the number of third party collection dollars returning to NMCSD. Under the CHAMPUS Reform Initiative (CRI), resource sharing agreements with a primary contractor, Aetna Government Health Plans, additional personnel and equipment have been provided to NMCSD at the contractor's expense. Aetna's rationale for resource sharing is to provide more cost effective care in-house at NMCSD, rather than pay for non-active duty (CHAMPUS) patients to be referred to civilian hospitals.

Lead Agency and resource sharing agreements under CRI, create a high probability that the NMCSD will attract more patients with a greater acuity and complex diagnoses. Since in order for graduate medical education (GME) programs to maintain certification, resident physicians must be exposed to and treat a variety of specific case types and diagnoses. Unfortunately, it is difficult to predict the increase and determine the case mix. The possibility of a fluctuating census makes it difficult to determine the type of staff required to care for those patients admitted to the wards. This results in higher costs to the MTFs as resources are allocated based upon historical data rather than the actual census on board.

Currently, there are three proposals at NMCSD that have the potential to increase the efficiency of health care delivery:

1. Reorganizing Nursing Services and establishing nursing case managers (NCM)
2. Participating in an admissions scheduling system study co-sponsored by the Veterans' Administration and DoD, and,

3. Implementing a preadmission certification program.

Each proposal is described briefly below.

Nursing Reorganization and Case Management

In September 1993, the nursing directorate began plans to reorganize. Historically, nursing services in the navy were divided into three areas of nursing care: ambulatory, inpatient and perioperative (Appendix A). Barriers existed among these areas of responsibility because of separate vertical hierarchies that often had the effect of impeding the free flow of communication. There was no clear way to oversee the status of both wards and clinics and plan the continuum of care for patients transitioning from ambulatory care to hospitalization and to eventual discharge.

Under the reorganization (Appendix B), clinics and wards serving the same medical or surgical specialty were established as new departments under assistant directors of nursing who will oversee both ambulatory and inpatient areas for Medical, Surgical and Woman and Childrens' Health specialties. In addition, each assistant directorate added a Nurse Case Manager (NCM) who will work closely with physicians, ward nurses, and ancillary personnel (i.e. social workers, physical therapy, etc.) to coordinate the transition from ambulatory to inpatient status, begin discharge planning shortly after admission and oversee the adherence to critical pathways developed for each diagnosis. Cost savings may be realized through careful utilization management of the health care delivered, as monitored by the NCM.

Admissions Scheduling Study

The control of inpatient bed occupancy has been cited as one method in which cost savings may be realized without incurring major changes in the practice of medicine or the

method of reimbursement for health services provided. With federal hospitals being provided fewer taxes dollars and tasked with offering more services, the VA and DoD health care systems are reevaluating planning and control systems that have potential for reducing operating costs. The objective behind the joint VA/DoD research proposal is to design a computer-based admissions scheduling system consisting of a number of decision rules which will direct hospital admissions personnel in daily operations. The system will look at the number of elective patients to schedule, define urgent admission policies, and develop provisions for emergency patients. Based upon input provided by members of the various medical and nursing directorates regarding patient flow patterns, arrival rates, and lengths of stay, a simulation model will be created with decision rules developed specifically for NMCSD. Previous research cited by Lowery and McKee (1993) has shown that most hospitals experience variability in average daily census due to poor admissions scheduling. It is not known if this rationale is the cause for census fluctuation at NMCSD, but descriptive statistics of the census from three randomly chosen wards during the June - August 1993 timeframe (Appendix C) show significant variation. Stabilizing the occupancy of the inpatient census through utilization of an admissions scheduling system could improve the utilization of costly resources (beds, staff and equipment). Therefore, NMCSD decided to participate in the VA/DoD study and data were collected and submitted to the VA/DoD researchers. Analysis of the data will be completed by the summer of 1994.

Preadmission Certification

During the summer of 1993, a Preadmission Nurses Task Force from the Quality Assessment and Improvement Department at NMCSD provided recommendations to the ESC

citing rationale of how an effective preadmission certification program would enable NMCSD to plan and manage resources and patient care in a more efficient and financially prudent manner. Responsibility of the individuals in this role would focus on third party reimbursement and the coordination of quality care with nursing and medical staff (nursing case managers in particular). Implementation and staffing of a precertification program would focus on two aspects:

1. Administration and finance - including insurance verification, prior authorization, precertification, recertification (if indicated), and other administrative requirements.
2. Clinical - arranging for/ordering preadmission testing, preanesthesia evaluation, clinical support referrals (as indicated), social services/continuing care planning (with case managers), review and coordination of test results, coordination of documents, and the institution of a medical record.

Four registered nurses with significant patient care expertise are required to affect this proposal. Training will be provided prior to implementation to include (but not be limited to):

1. Hospital orientation
2. Composite Health Care System (CHCS) training in the finance and admissions modules
3. Interqual ISD-A criteria for admission and hospitalization
4. Specific NMCSD policy guidelines for inpatient care
5. Insurance company policy guidelines

6. Guidelines for interdepartmental communication and coordination

Statement of the Problem

Generally, the case mix of patients admitted to a medical facility is dictated by the type of services it provides. This is a relative constant as is the number of beds (equating to the maximum number of patients that can be admitted) and the number of staff a hospital employs. The military commander is now tasked with an additional responsibility of how to recoup money for services provided to eligible beneficiaries with third party insurance. By law, this is the only allowable method for reimbursement (other than standard billing for daily subsistence fees) as CHAMPUS and Medicare are deemed non-billable by law. Health Maintenance Organizations (HMOs) are not billed for medical services provided to their enrollees unless the care is provided under emergency conditions or pre-authorized. NMCSD is projected to recover approximately \$4.5 million to make up for roughly one third of a budget deficit. This amount, and probably more, can be billed to third party insurance carriers, but the amount actually paid largely depends on preapproval and the appropriateness of admissions.

Preadmission programs are in place in most civilian facilities. The primary intent is to certify the need for admission as well as verify the patient's possession (or lack) of third party health care insurance. Implementation of the same type program in military MTFs can help recover costs previously lost through non-compliance with insurance company regulations.

To determine the effectiveness that implementation of a preadmission program would have at this command, the question of "what is the cost of not having a system in place to

control admissions?" must first be answered. A review of the literature is in order to identify, compare, and contrast past, present, and future trends in this area. The relationship between preadmission certification, case management and admissions scheduling systems will be discussed relative to their impact on controlling the desired outcome - cost effectiveness.

Literature Review

The *Consolidated Omnibus Budget Reconciliation Act of 1985* (Public Law 99-272, section 2001[a][1]) was enacted by Congress to permit the Department of Defense to collect from third party payers "for reasonable hospital costs incurred on behalf of most DoD health care beneficiaries." This legislation was based on the premise that third party insurance plans should not be exempted from health care payments solely because beneficiaries received care on a space available basis in military health care facilities. This law was implemented as DoD policy in September 1987. In 1989, Congress amended the statute allowing those collections to be returned directly to the MTF collecting from third party payers, rather than depositing directly into the general treasury. This change in the law provided a greater incentive for MTFs to collect from insurance companies and, as expected, there was a noted improvement in participation throughout the military. In 1990, Congress made three significant changes to *10 U.S.C. 1095* that allowed MTFs to bill supplemental insurance carriers for outpatient services, collect from Medicare supplemental insurance, automobile liability and no-fault insurance carriers for treatment of eligible beneficiaries in military hospitals. These funds, once recovered, would again be returned to the MTF for services rendered. It was projected that failure to implement such a program would result in a net loss of approximately \$318 million for fiscal years 1990 through 1994 (Bynum 1992) .

To collect allowable private insurance monies, certain rules and policies must be followed. Utilization review (UR) programs were developed to meet these external requirements. The primary areas of concern for controlling utilization centers around three major points:

1. preparation for admission
2. the hospital stay, and,
3. preparation for discharge.

Preadmission review has been shown to be one of the most effective ways to maximize hospital efficiency, improve reimbursement, and provide quality care (Baschon 1992). Correct handling of precertification during the preadmission phase is critical since claims that may be denied because of poor preliminary workup increase the burden on the collection process, drive staffing costs up, and expand outstanding accounts receivable. Salmon and Alderfer (1990) suggest that gathering information about insurance companies will greatly improve compliance with insurance preadmission regulations. They recommend the following steps:

1. Get detailed answers in writing, eg. what procedures require precertification (per each carrier)
2. Get the name of a specific individual to contact with precertification request
3. Make note of when or what procedures that only a physician may request precertification
4. Detail the procedure to be followed when post-operative complications or other issues that require treatment and inpatient time greater than what is normally

allowed by the carrier

5. Determine circumstances when precertification may be denied and work to avoid those situations

According to Blue Cross/Blue Shield protocols (Sweetman 1993), admissions that are deemed inappropriate and not approved by the third party payor may cost the hospital \$500 each in penalties. Therefore, it is imperative that a hospital develop a mechanism for the preadmission program to effectively plan and manage:

1. Patient admission and initial services in the hospital
2. Use of resources/ancillary services prior to admission
3. Reimbursement by eliminating costly retrospective peer review and third party payor payment denials by closely working with the physician, clinic staff, and admissions department

Ideally, preadmissions personnel should be registered nurses with patient care experience. They should be knowledgeable in quality of care, utilization and reimbursement, hospital and individual physicians' policies, procedures and protocols, and reimbursement policies and procedures (Interqual ISD-A 1993) .

Lewis and Lamprey (1993) opine that utilization controls will become more critical with health care reform because of pending price freezes or capitation. In order to stay within an allotted cap, they recommend:

1. Eliminate all inappropriate care. Many interventions are performed due to lack of knowledge, excess caution, inadequate consideration of conservative management, fee generation, and actual/perceived pressure from patients to "do something."

2. Redefine inappropriate care to include services aimed at minor improvements in patient or provider comfort and/or convenience.

When evaluating the need for a precertification program, there are several factors to consider (Baschorn 1992):

1. Medically unnecessary admissions will be denied payment from peer review organizations (PROs) and third party payers.
2. Preadmission review offers the opportunity to schedule preadmission testing (PAT) at least 72 hours prior to admission for elective surgical patients. The benefits of PAT are the ability to bill for outpatient test separately from DRG, identify abnormal test results that would result in cancelling surgery prior to admission, and an improved efficiency in ancillary departments by being able to process studies outside of peak workload times.
3. Anesthesia and medical consults scheduled as outpatient workups 72 hours prior to admission can be billed separately.
4. Preoperative teaching (i.e. physical therapy - crutchwalking or gait training) can begin prior to admission when a patient is not medicated or in pain.
5. Patients needing discharge planning are identified prior to admission, thus allowing additional time for case managers to make appropriate arrangements.
6. Pre-procedural review and second surgical opinions can be obtained as needed, including information necessary to support medical necessity.
7. Maximize use of observation beds.
8. Admissions may increase as physicians get advice on cases that may have been

borderline for appropriate inpatient care.

Scheffler, Sullivan and Ko (1991) report results of a study examining the impact of utilization management programs under Blue Cross/Blue Shield plans for the period 1980-88. Statistical results during this time period indicate that preadmission certification, concurrent review and retrospective denial of payment programs could be "associated with lower hospital admissions and fewer inpatient days and payments per 1000 members." Reduction in Blue Cross/Blue Shield payments for hospitals implementing these programs was estimated at \$2.55 billion in 1988 dollars.

Delivery of patient care may be enhanced by preadmission certification. A comprehensive interview, including a nursing history, physical assessment, surgical consents, and advanced directives can be obtained during the preadmission process (Mahn 1993). Nursing evaluation of the patient during preadmission contacts can increase awareness of patient needs and concerns within the complex multidisciplinary health care system. Nurses may facilitate collaboration among physicians and allied health professionals and thus help patients achieve desired outcomes quicker while decreasing lengths of stay and assuring continuity of care in a cost effective manner (McGinty, Andreani, and Quigley 1993) . Rode (1992) suggests that hospitals should consider assigning staff with substantial clinical skills to the admitting department to facilitate the patient accounting function. By combining clinical expertise with admitting and utilization review functions, one may achieve an advantage for care providers who must satisfy requirements of insurance companies and government programs during this emerging era of managed care through efficient billing practices..

A number of sources address the appropriateness of elective admissions (relative to reimbursement by the third party payor) and provide criteria sets. Examples include *Interqual ISD-A* and *Blue Cross/Blue Shield Medical Necessity Guidelines* which examine the severity of illness (SI) and intensity of service (IS) guidelines. SI/IS criteria are body system specific (i.e. gastrointestinal or cardiovascular systems) and generic for non-specific situations. The SI section compares patient symptoms noted at the time of admission with the criteria sets. The IS section determines guidelines for the type and frequency of treatments or interventions for a patient with given symptoms or diagnosis. From this information, the appropriateness of each day of care, discharge screening and length of stay criteria or norms are used to identify potential medically unnecessary days for which reimbursement may not be allowed (Bashon 1992).

It is important to use current criteria when determining appropriateness of elective admissions. Lewis and Lamprey (1993) cite an example of a hospital losing \$12 million because its staff followed standards that were three years out of date. Simply by investing several thousand dollars to update the criteria used by insurance carriers for reimbursement, the hospital could have earned millions in medical payments.

One of the major foci of preadmission certification is the need for consistent data collection and review. Individuals should have the same trainer and a thorough orientation specific to the skills needed to acquire the desired knowledge. Staff must be held accountable and errors dealt with promptly (Daskalakis 1992).

Preadmission has its adversaries as well. Halloran (1991) questions the economic feasibility of such programs. The annual report of the Medical Society of Virginia Review

Organization regarding the Medicare precertification program for selected surgical procedures identified only 13 of 44,867 (0.03 percent) cases that were denied preadmission approval. Assuming that ten minutes were spent on each precertification transaction, and three persons employed to conduct precertification, 22,500 manhours were spent denying payments for 13 cases. Multiply these manhours times the \$17.50 per hour average salary cost, approximately \$390,000 was spent in order to recoup less than \$30,000.

Nurse case managers form the core of a professional nursing network responsible for creating an integrative system of nursing care. Accountability for cost-effectiveness, access and quality of care extends beyond the typical acute or long term care services, to home health, community health and specialty nursing services. Nurse case managers target patient populations who are at risk or unable to manage chronic health problems, need temporary community services to help recover from acute illness, and/or for the terminally ill who require support. Most patients are referred from acute care nursing staff, although referrals can come from physicians, social services, or preadmission nurses as well (Falk 1993).

The role of the nursing case manager evolved as a result of excellent nursing clinicians seeking avenues of job enrichment and enhancement rather than being "promoted" to management positions. By guiding patients through the health care maze, NCMs improved efficiency by decreasing lengths of stay. In one study of 314 patients from 20 DRG categories, at least a \$552 savings per case managed patient was realized (Phillips, et al. 1993). Both precertification and case management have expanded because of many health care administrators' commitments to managed care principles. Abbott (1993) concludes "Patients are better prepared in relation to their planned activity of care, thus enabling them

to achieve mutual goals within estimated times." These principles have also carried over to have a positive effect on nurse/physician relationships through increased collaboration and improved communication.

Increased collaboration among nurses has a positive impact on patient care as well. At Mercy Hospital in Bakersfield, California, the position of an Admission Assessment Coordinator (AAC) has been introduced. The purpose of this new role is to decrease the burden on ward nurses when patients are admitted, especially during busy time periods. Primary responsibility begins when the patient arrives on the ward. The AAC begins an interview process, provides unit orientation and performs the physical assessment. The admitting physician is contacted as needed for orders or for needs not addressed and consults to appropriate ancillary departments initiated in order to expedite the discharge process. The AAC introduces/reports to the staff nurse assigned to the new admission. Secondary responsibilities include addressing immediate concerns (starting an intravenous line, inserting a catheter, etc.), making daily visits to the patient, and/or providing education for the patient and his/her family (Baker 1991).

Without a collaborative effort between nurses and physicians, any process designed to change care flow patterns is doomed to failure. This form of practice (cost containment) requires a multidisciplinary approach. Joint nurse-physician liaison committees that are equally represented and co-chaired, increase member participation, enhance contributions to agendas and assure growing collegial support. A nursing liaison for every major medical department head provides a point of contact, improved communication, and an avenue for problem solving. Critical pathways can be developed by combining nurse-physician input and

consensus reached on how best to reduce lengths of stay and costs (Abbott 1993; Shortell 1990) .

Critical pathways are used to identify specific problems and interventions associated with health care delivery for a patient during the hospital stay. Treatments, subcategorized by medical, nursing and ancillary interventions are mapped out. The care delivered for that day is intended to help the patient achieve a desired outcome which is also listed on the pathway. Using interdisciplinary members of the health care team, the critical pathway is reviewed and revised until it is agreed that it can be applied to at least 70 percent of all patients with a given diagnosis. From this data, identification of procedures/programs that can be performed on an outpatient basis (prior to admission) are made, thus potentially reducing inpatient length of stay and theoretically enhance reimbursement. Quality of care is not compromised since outpatient programs address patient outcomes with reduced inpatient days (Wright 1993).

Before attempting to determine how to decrease lengths of stay, the admissions scheduling process should be examined. In the typical community hospital, the admissions process is not based upon a systematic analysis of lengths of stay patterns, probability of transfers between services, or the variability of interarrival times of emergency patients. Failing to use these types of criteria results in cancellation of scheduled admissions or creates the necessity to turn away emergencies. Variation in census becomes significant with resources being allocated to meet peak workloads, although peak workloads only occur occasionally. These inefficiencies result in costly hospital resources not being used appropriately (Lowery and McKee 1993) .

Hancock and Walter (1983) demonstrated that implementation of an admissions scheduling system can save a hospital between \$45,000 and \$750,000 per year (depending on the size of the hospital in terms of occupied beds). The savings in under-bedded facilities (census below average bed capacity) were seen by increasing admissions without incurring a proportionate increase of resources (staff, equipment and beds). Savings in over-bedded facilities (census above average bed capacity) were achieved by reducing bed capacity without reducing services. Through the development of a simulation model of the admissions process and patient movement between different hospital services, specific decision rules could be determined. Admission clerks now have guidelines regarding how many elective patients to schedule for admission, the number of patients to call in from the projected admission waiting list, and if necessary, how many scheduled admissions to cancel in order to ensure beds are available for emergency patients.

The bottom line in initiating any one, or all of these aforementioned programs (preadmission certification, nursing case management, or admissions scheduling systems) is improving cost effectiveness in delivering health care. Cost reduction alone is merely the lowering of expenses, often at the expense of quality. The dimensions of quality and effectiveness in meeting both the customers' and organization's requirements, as well as resource costs, must be addressed in order to reach the desired outcomes (Marszalek-Gaucher and Coffey 1990). Physicians, nurses, and other allied health personnel should be actively involved in the decision making process in cost-containment issues. This should include the need for continuing education of physicians regarding cost effective medical practice and their role in UR/UM programs. When possible, initial efforts should be centered on containing

costs in areas not directly affecting patient care. Likewise, efforts to demonstrate a positive link between cost-effective utilization of resources and quality of care should be encouraged. These cost-containment efforts must be supplemented by programs that meet community needs. This will enhance both hospital and physician revenues as well as increase market share (Shortell 1990) .

Gathering baseline data is necessary to determine if instituting a preadmission program ensures appropriateness of admissions. Two major reasons for the quantification of health care delivery system data is to first describe the population under consideration. Demographic characteristics (age, sex, social class, etc.) and disease specific mortality and morbidity provide an indication of both general health levels and availability of medical care within and among community groups. Secondly, demographic analyses of providers (physicians and hospitals by average number of visits, practice location and specialty) descriptively tell us how many of what kind of patient is at risk, what kinds of diseases/illnesses they have, the distribution of disease processes throughout a beneficiary population, who goes to whom or where for what kinds of health services, provided by which type of caregiver (Kovner 1990) .

Quantitative progress can be documented by measures of the process (Marszalek-Coffey 1990) . These include:

1. Output measures - volume, quality, or service level (patient getting well, total time spent at clinic, cost of medications, etc.)
2. Input measures - staff hours worked, quantity/quality of work produced
3. Productivity measures - ratio of outputs divided by inputs

4. Utilization measures - percentages of available resources used (appropriateness of utilization must be addressed separately)
5. Financial and budget measures

Performance measures must be checked for appropriateness and consistency with the department's goals and objectives as well as its function. It is of critical importance that before moving into new ventures, evaluative tools are predetermined and tested and baseline data gathered in order to validate the effectiveness of our efforts (Abbott 1993) .

Purpose

The intent of this study will be to determine what relationships exist (if any) between patient demographics (age, sex, beneficiary status), location of duty station/home (within 50 mile radius of NMCSD), possession of third party insurance (TPI), and admitting service, with the appropriateness/inappropriateness of patient admissions, as determined by Interqual standards. The secondary purpose of this study is to project cost savings to NMCSD providing that inappropriate admissions with subsequent potentially avoidable occupied bed days can be eliminated. Once this program has been in place for a given period of time, the study can be repeated, using the data and analysis proposed here for comparative purposes to determine the cost-effectiveness and/or justification for the continuation of preadmission certification in the future. Therefore, the following hypotheses are proposed:

H_{01} : Patient age does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{02} : Patient gender does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{03} : Patient beneficiary status does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{04} : Location of the patient's duty station/home does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{05} : Possession of third party insurance by the patient does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{06} : The admitting medical service does not influence the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

and

H_{a1} : There is a statistically significant relationship between patient age with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{a2} : There is a statistically significant relationship between patient gender with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{a3} : There is a statistically significant relationship between patient beneficiary status with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{a4} : There is a statistically significant relationship between location of the patient's duty station/home with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{a5} : There is a statistically significant relationship between possession of third party insurance by the patient with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

H_{a6} : There is a statistically significant relationship between the admitting medical service with the appropriateness of hospital admission in accordance with Interqual ISD-A standards.

In order to reject the null hypothesis, a one-way analysis of variance (ANOVA) will be conducted. The intent is to measure the variability between and within groups - the independent variables (gender, beneficiary status, proximity of duty station/home, possession of third party insurance, and admitting service) with the dependent variable, (in)appropriate admissions as determined by implementing Interqual ISD-A standards in order to justify the inference that the means of the population from which the different groups were sampled were not in fact the same. Failing to reject the null hypothesis after determining the significance of the F ratio will lead to the assumption that inappropriate admissions may be related to:

1. Factors other than patient demographics, diagnosis or admitting service; or
2. Inadequacies of the Interqual standards applied
3. Too small a sample

4. Measurement error

5. Due to chance

thus prompting further study. Rejecting the null hypothesis, in partial or in full, will be as result from showing a statistically significant relationship of one or more of the independent variables with inappropriate admissions.

The objectives of this project are as follows:

1. Determine if any relationship exist between patient demographics, proximity of patient's duty station/home, possession of third party insurance, and admitting service, with the inappropriately admitted patient.
2. Provide baseline data of the number and types of patients inappropriately admitted and the number of potentially avoidable occupied bed days prior to the implementation of a preadmission certification program for comparison purposes once the preadmission program begins.
3. Determine if census variation can be reduced by decreasing the number of inappropriately admitted patients.
4. Encourage nurse-physician liaisons and team participation with other allied health professional and clerical staff in providing cost-efficient quality health care.
5. Approximate total savings to the command with full implementation of a preadmission certification program.
6. Identify other alternatives that may also result in cost savings through controlling the admissions process.

CHAPTER 2

METHODS AND PROCEDURES

To determine whether patient demographics (age gender, status), proximity of duty station/home to NMCSD, possession of third party insurance (TPI) and/or admitting service impacts the determination of an inappropriate hospital admission, the following data will be examined. Beginning Monday 01 December 1993 through 28 February 1994, personnel from the Utilization Management (UM) branch of the Quality Assessment and Improvement (QA & I) Department will record the following data after reviewing the hospital charts of randomly selected admission to NMCSD:

1. Patient Demographics (subdivided by age, gender, and beneficiary status [active duty/dependent/retiree] status)
2. Proximity of duty station or home to NMCSD (less than or equal to 50 miles, or greater than 50 miles from NMCSD).
3. Possession of reimbursable third party insurance
4. Admitting service
5. Potentially avoidable admissions/bed days
6. Rationale for inappropriate admissions

Potentially avoidable admissions/bed days is the dependent variable measured as continuous data as is the independent variable "age." The other independent variables -

gender, beneficiary status (subcategorized as active duty, dependent, and retiree), possession of reimbursable TPI, proximity of duty station/home, and each of the fourteen admitting services were coded as binary data (coded "1" if the independent variable was present, coded "0" otherwise). Using *SPSS/PC+ Studentware Plus* software, descriptive statistics were determined for each variable for the sample obtained from the population ($n=115$) followed by conducting oneway ANOVA in order to compute the F ratio which will provide an estimate of the variability in the population: the within-groups mean square and the between-groups mean square. The within-groups mean square will show the amount of variance observed within each of the independent variables with the dependent variable, whereas the between-groups square reflects the amount of variation of the group means among themselves. These two numbers would be close to each other if the null hypothesis is not rejected. Dividing the between-groups mean by the within-groups mean square provides the F statistic or F ratio (Norusis 1991). For the purpose of this study, F is deemed significant at $p < .05$.

It is understood that analysis of variance is only a preliminary and exploratory tool in providing a first step of an analysis of more complex designs. If the F ratio proves to be statistically significant, it can be inferred that the findings in the data can be attributed to reasons other than chance. Attempts to isolate the presence, nature and extent of this "non-chance" influence can be conducted by further research and analysis (Isaac and Michael 1981).

Guilford (1978) lists four principal assumptions as a prerequisite for using analysis of variance as a parametric technique:

1. The contributions to variance in the total sample must be additive
2. The observations within sets must be mutually independent
3. The variances within experimentally homogenous sets must be approximately equal
4. The variations within experimentally homogenous sets should be from normally distributed populations

Random sampling within each set along with the use of a good tool are of utmost importance in meeting these assumptions. Failure to do so compromises the study resulting in less significant F ratios than what seems to appear (Guilford 1978). The criteria set forth by these assumptions have been met for the data collected.

Confidentiality is preserved throughout the study as the data reported by the UM personnel did not include any identifying factors (i.e. name or social security numbers). Because this data is routinely collected for UM purposes and the standard privacy act statement allows for the release of this type of information is signed upon admission, requesting permission from the patient is not necessary. For the purpose of this study, only the admitting service (i.e. internal medicine, orthopedics, etc.) rather than individual providers were identified for trends regarding the appropriateness of admissions, thus maintaining professional confidentiality as well. Extraneous factors identified by Isaac and Michael (1981) which could potentially confound internal validity have been presumed controlled as follows:

1. History - no significant events occurred at NMCSD during the collection of data between admission reviews that may have impacted how the study was conducted.
2. Maturation - not deemed a factor as UM reviewers all have the same level of

- experience and training in utilizing Interqual standards in their daily practice.
3. Testing - subsequent testing/reviewing has no impact on scores of future testing.
 4. Instrumentation - although Interqual standards are updated annually, the methodology of scoring has not changed.
 5. Statistical Regression - neither groups reviewing or being reviewed are selected on the basis of extreme scores.
 6. Selection - non-biased based on randomness of review.
 7. Experimental Mortality - no loss of subjects from comparison groups.
 8. Selection-Maturation Interaction - no noted interactions between these aforementioned variables that could be mistaken for the effects of the independent variables.

External validity will be maintained by no changes in treatments (using Interqual standards as the established tool) or in personnel collecting data. Isaac and Michael (1981) discuss four factors that may jeopardize the external validity or representativeness of the study:

1. Interaction effects of selection biases - Although this study was conducted at NMCSD, Interqual standards are mandated by the Department of the Navy for use by UM personnel in all inpatient facilities. By implementing the same standards in each facility, Interqual scores may be generalized between facilities for the purpose of comparison.
2. Reactive or interaction effect of pretesting - No pretesting is conducted during daily admission reviews.

3. Reactive effects of experimental procedures - Physicians and other personnel were not informed of this study in order to prevent intentional (or otherwise) prejudicing the manner in which they currently admit patients.
4. Multiple treatment interference - Reviewers are only using one set of standards, thereby not being exposed to other tools which may impact their judgement.

Strumwasser, et al. (1990) measured the reliability and validity of the Interqual ISD criteria sets with the Appropriateness Evaluation Protocol (AEP) and the Standardized Medreview Instrument (SMI). Validity was measured by having each instrument tested by comparing the judgement of nurse reviewers using the instruments with the judgement of a panel of physicians. Cohen's kappa statistic was used to measure agreement between groups. The kappa calculation provides a measure of agreement between the UR instrument and the physician panel that was corrected for chance between these two measurements. Perfect-above-chance agreements receives a kappa of one. Above-chance agreement receives a kappa of more than zero, whereas below-chance agreement receives a score of less than zero. Each of the instruments were tested in different physician settings (HMO and Fee for Service). The kappa for ISD ranged from 0.32 to 0.70, with a significance of $p < .001$, consistently outscoring both AEP and SMI.

Reliability refers to consistency and stability that an instrument measures what it intends to measure (Isaac and Michael 1981). Reliability of the Interqual tool has been established for accuracy and is utilized by third party payers (insurance companies) across the United States as a basis for determining the appropriateness of reimbursement for hospitalization. Strumwasser, et al. (1990) tested for reliability of the ISD, AEP and SMI

tools by examining the proportion of judgements in which two reviewers agree on the appropriateness of nonacute admissions (those deemed not appropriate) using each tool. The AEP and ISD have non-specific values of 85 percent and 74 percent respectively (kappa values of 0.59 and 0.49; $p < .001$) with the SMI scoring 57 percent (kappa value 0.48; $p = .20$).

Overall, Strumwasser, et al. (1990) find both the AEP and ISD to be moderately reliable and moderately valid and SMI to have both low reliability and validity, with the recommendation to discontinue the use of the SMI. He also recommends that admission or payment should not be denied based solely of findings of either instrument alone. If deemed inappropriate, a physician should review the chart in order to confirm or reject the claim that inpatient care is not required.

CHAPTER 3

RESULTS

Between 01 December 1993 and 29 February 1994, 6604 patients were admitted to NMCSD (Table 1).

Table 1. - Admission Review Data

	December	January	February	Total
Admissions	2095	2416	2093	6604
Charts Reviewed	134	387	378	899
Inappropriate Admissions	18	39	70	127
Potentially Avoidable Days	?	94	95	189 ⁺
Percent Inappropriate	13.4	10.1	18.5	13.6

From the 127 admissions deemed inappropriate, a sample of 115 admissions from January and February were studied. Inappropriate admissions were not included from December's data because demographic data (age, gender, beneficiary status), proximity of duty station/home and possession of third party insurance data were not collected. (This was the first month of data collection for the purpose of this study which also happened to be during

the Christmas holiday period. Staffing was low and fewer charts were reviewed. Instructions were reinforced for the following months). Table 2 provides descriptive statistics for the continuous variables (age, occupied bed days [OBD], and potentially avoidable days [PAD]).

Table 2. - Descriptive Statistics for Continuous Variables (N=115)

Variable	Range	Mean	Median	Mode	S.D.	Total
Age	20-87 yrs	51.72	53	*	18.85	115
OBD	1-23 days	3.57	2	2	3.68	410
PAD	0-20 days	1.65	1	1	2.44	190

* multiple modes exist (31, 63, 64 and 72 years)

Table 3 provides descriptive statistics for binary independent variables (beneficiary status, gender, resides > 50 miles from NMCSD [proximity], and possesses reimbursable third party insurance [TPI]).

Table 3. - Descriptive Statistics for Binary Independent Variables (N=115)

Variable	Total	Percent of Total
Beneficiary Status - Active Duty	42	36.5
Retiree	43	37.4
Dependent	30	26.1
Gender - Male	79	68.7
Female	36	31.3
Resides > 50 miles away	42	36.5
Possesses TPI	7	6.1

Table 4 provides descriptive statistics on the 14 admitting services.

Table 4. - Descriptive Statistics for Admitting Services (N=115)

Variable		Total Reviews	% of Total Review	Total Admissions	% of Total Admissions
Service	Code				(of service)
Int. Med	AAAA	2	1.7	396	0.5
Cardiology	AABA	35	30.4	427	8.2
Gen Surgery	ABAA	13	11.3	569	2.3
Neurosurg'y	ABDA	10	8.7	102	9.8
Ophtham'gy	ABEA	2	1.7	227	0.9
Oral Surg'y	ABFA	2	1.7	58	3.5
Otolaryng'y	ABGA	14	12.2	565	2.5
Plastic Surg	ABIA	2	1.7	85	2.4
Proctology	ABJA	1	0.9	5	20.0
Urology	ABKA	8	7.0	247	3.2
Unknown*	ABLA	2	1.7	n/a	n/a
Vasc Surg	ABNA	15	13.0	63	23.8
Gynecology	ACAA	6	5.2	432	1.4
Orthopedics	AEAA	4	3.5	494	0.8
Total		115		3670	3.1 (ave)

* most likely miscoded by UM reviewer - no service or admissions listed for this code

Upon examining the results of the ANOVA conducted on the impact of the independent variables on the dependent variable (inappropriateness of admission), the results

preliminarily indicate that with exception of H_{a1} "age" in entirety and H_{a6} "service" being accepted in part, that a statistically significant relationship exists between these variables and the appropriateness of hospital admissions in accordance with Interqual ISD-A standards, the study has failed to reject null hypotheses H_{02} , H_{03} , H_{04} , and H_{05} . The Internal Medicine Department (AAAA) and Gynecology (ACAA) were the only two admitting services who's F ratio was significant at the $p < .05$ level. Table 5 presents the results of the F scores for each variable and the associated probabilities that led to this conclusion.

Table 5 - F scores with probabilities for Oneway ANOVA studies of Independent Variable Impact on Appropriateness of Admissions (N= 115; d.f. [1,113])

Variable	F ratio	Probability (p)
Beneficiary Status		
Active Duty	1.31	.254
Retiree	0.02	.878
Dependent	1.17	.281
Age	2.60	.0002*
Gender	0.614	.435
Proximity (> 50 miles)	0.849	.359
Reimbursable TPI	0.062	.804
Admitting Service		
AAAA	8.576	.004*
AABA	3.357	.069
ABAA	1.609	.207
ABDA	0.112	.738
ABEA	0.145	.705

Table 5 - Continued

Variable	F ratio	Probability (p)
ABFA	0.145	.705
ABGA	0.000	.988
ABIA	0.008	.930
ABJA	0.072	.790
ABKA	1.373	.244
ABLA	0.008	.930
ABNA	0.008	.930
ACAA	7.088	.009*
AEAA	0.247	.620

* deemed statistically significant by parameters set for this study

Upon further review of these data, it is felt that the statistical significance is probably prejudiced by the small sample size for the Internal Medicine and Gynecology services, thus resulting in a Type I error and the subsequent non-acceptance of H_{a6} . Accepting H_{a1} will stand despite the small sample size because of factors identified from the rationale recorded by the UM reviewers on why admissions were deemed "inappropriate (Table 6). In order to confirm a relationship between "age" and "PAD" and inappropriate admissions, a correlational analysis was performed on these continuous variables with Pearson's $r = 0.221$ and $p = .018$, once again resulting in the acceptance of H_{a1} .

Table 6. - Most Common Rationale for Inappropriate Admissions

Admitted for:	Number of Cases
Cardiac Catheterization/Angiogram	42
Preoperative Workup	29
Proximity of Duty Station/Home >50mi.	21
Short Stay/Same Day Surgery Candidate	11
Admitted and Given Special Liberty	8
Admitted - Procedure Performed in Clinic	5
No Family to Drive to/take care of at home	3
Admitted for Procedure Not Done	3
Radiation Therapy	2
Home Health Care Delayed	2
Observation	2
Outpatient Workup	2
Nephrolithotomy	2
Hospice Care	1
Bumped from OR Schedule	1
Cataract Surgery	1
No Rationale	1
	<u>147*</u>

* NOTE: Total > than N=115 due to multiple reasons for inappropriate admissions.

As Table 1 indicates, there were 127 inappropriate admissions identified for the December 1993 to February 1994 timeframe. These inappropriate admissions accounted for an excess of 189 potentially avoidable bed days. The cost of resources for each occupied bed day at NMCSD has been determined by the Fiscal Department to be \$780.00 per day.

Therefore, these three months of PADs resulted in a net loss of \$147,420.00 to this command (approximately \$600,000 per year). Multiplying the \$780 times the numbers of days for the rationale indicated listed in Table 6 will provide a baseline of costs to NMCSD for various inappropriate admission practices. To determine the costs attributable for each admitting service, the same figure can be multiplied by the number of PADs, thus identifying those areas creating the highest avoidable costs for inappropriate admissions.

The next chapter will discuss the above mentioned results in greater detail as to their relevance to inappropriate admissions and the potential impact on previously discussed preadmission certification, case management and admission scheduling systems. This will be followed by concluding remarks and recommendations that could further save budget dollars for NMCSD, or any other command in the future.

CHAPTER 4

DISCUSSION

Admission Reviews

As noted in Table 1, of the 6604 admissions to NMCSD during the December 1993 to February 1994 timeframe, only 899 (13.6 percent) of the charts were reviewed for appropriateness using Interqual ISD-A criteria, and only 14 of 37 admitting services were reviewed by Utilization Review/Utilization Management personnel.

Currently, there are five to six individuals performing admission reviews. They work Monday through Friday, with the exception of holidays. High admission services such as Pediatrics and Psychiatry are not reviewed for appropriateness. Generally, less than 10 charts per person are randomly selected for review per day. Reviewing the data collection sheets, it is noted that many days there are only one or two individuals conducting reviews. All individuals have been provided "in-house" training in the use of Interqual standards, but none (as of 01 March 1994) have attended a training session leading to certification by Interqual in the appropriate use of the standards.

Out of fairness to the UM department, it must be noted during the course of this study (November 1993 to February 1994), there has been a significant increase in the number of inappropriate admissions identified (0 for the month of November, 18 in December, 39 in January and 70 in February). In addition, beginning in January 1994, a report of all

inappropriate admissions by service and the resulting number of PADs and costs to the command are forwarded to each Director for action. Although a 100 percent admission review is ideal, this goal is too ambitious with the current number of staff employed by the UM department. A 50 percent review is realistic with each individual responsible for reviewing 10 percent or approximately 220 admission charts per month, which averages out to be approximately ten charts per 22 day work month. Increasing the number or percentage of records reviewed will not necessarily provide a larger sample size that could potentially provide statistical significance to a follow-up study. For an $N = 2200$, a minimum sample of 327 randomly chosen charts are required for p to be within $^{+/-} .05$ of the population proportion (Isaac and Michael 1981). However, studying a larger sample of specific admitting services to determine statistical significance of inappropriate admissions specific for that service may be in order. According to Isaac and Michael (1981) for an $N = 115$ as used in this study, a sample size of 89 would be required for p to be significant at .05. Reviewing the "age" data and the resulting E scores in Tables 2 and 6, a sample size of 89 includes everyone 40 years of age and older, justifying H_{a1} 's acceptance that age may influence the inappropriateness of admissions. This is in contrast to a sample size of two inappropriate admissions for Internal Medicine and six for Gynecology that most likely helped contribute to a Type I error in terms of significance (Tables 4 and 6).

In Table 6, cardiac catheterization and angiogram were credited to various services, thereby not providing any credible significance to a particular service for the purpose of this study. As seen in Table 2, the mean "age" for patients was 51.7 years which definitely impacted on the increased number of potentially avoidable days in comparison with those

patients younger. These patients were almost predominant in the number of cardiac catheterization/angiogram and early admissions for preoperative workups.

A similar study conducted at another military treatment facility in the western United States provided similar results. The UM reviewers at that facility are all certified in the use of Interqual ISD-A standards and review approximately one-third of all admissions. A correlational analysis was performed on the number of alternative level of care days (ambulatory surgery, light care, preadmission testing, ambulatory, observation, isolation, bed and board, home/hospice, and extended care/rehabilitation) and the impact on PADs. Those that proved to be statistically significant were observation ($r = .546$; $p = .023$), isolation ($r = .548$; $p = .023$), home health ($r = .522$; $p = .022$) and extended care/rehabilitation ($r = .552$; $p = .022$). With the exception of isolation days (which are reported to be primarily used for enlisted members residing in a barracks environment, diagnosed with varicella), the other independent variables are attributed to retirees over age 55. Actual PADs for a ten month period during FY 1993 were only 117, with a total of 5 third party insurance denials. This is attributed to collaboration between the UM department and physicians and compliance with Interqual ISD-A criterium.

Third Party Insurance Collections

In order to recapture insurance reimbursement that had previously been missed, insurance verification is one of the areas of responsibility in the preadmission certification nurse's position description. It is interesting to note that of the 115 cases examined in this study, only seven (6.1%) of the beneficiaries had a billable third party insurance policy (Table 3). This data initially appears to support the argument previously discussed by

Halloran (1991) who questions the economic feasibility of preadmission programs. However if the same 6.1 percent can be applied to the 6604 admissions over the same timeframe, it can be assumed that approximately 403 patients would have a billable TPI policy that could recover up to an additional \$315,000 by the command.

Shortly after the start of this study, the Business Office in the Fiscal Department at NMCSD hired a registered nurse for the specific purpose of identifying billable policies, being a liaison with insurance companies and initiating the billing procedure. Patient Administration forwards a list of all patients admitted to the hospital along with the insurance status of the patient to the Business Office each day. After reviewing these admission lists, the third party collections (TPC) nurse then contacts the appropriate insurance company to obtain hospitalization authorization and any other certification requirements for NMCSD to get reimbursed. During the December 1993 to February 1994 timeframe, a total of 229 inpatient billings and 1371 outpatient billings have been submitted, compared with 59 inpatient and 47 outpatient billings for the same time period in FY 1993. This equates to inpatient and outpatient collections of \$1.2 million for the first four months of this fiscal year, compared with \$3.2 million collected for all of FY 1993. Although this does not appear to be significant at face value, it must be remembered that the average claim takes 90 days of processing before the command receives its reimbursement. Therefore, it is estimated that during the time period being studied, there are approximately 200 claims for services that NMCSD has billed, but has yet to receive payment for.

The information from the results of this study has provided an impetus for change in the manner that preadmission certification, case management and admissions scheduling could

be conducted, or combined at NMCSD. Recommendations on the utilization of these positions or the implementation of these programs will conclude this study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purpose of this research study was to identify variables that impact on the appropriateness of patient admissions. The only statistically significant variable identified was "age" in terms of impacting on potentially avoidable bed days. This factor is not totally surprising to anyone working in health care today because the elderly generally have fewer support systems and more health problems than their younger counterparts, resulting in longer and sometimes unnecessary hospitalizations.

This research has also identified some factors that have the potential to make precertification more efficient and cost effective to NMCSD or any other medical facility. These include the need for:

1. *Communication between Utilization Review/Utilization Management, Nursing Service, and the Fiscal Department*

The job description for the four proposed preadmission certification nurses incorporates many of the same responsibilities of the nurse case manager and the third party collections nurse. A task force has been formed by the UR/UM Department to examine rationale of why preadmission certification nurses are necessary, how they will best benefit the command, and to determine their overall function. No solicitation has been sought from

Nursing Service or the nurse case managers. Third party collections is performing some of the certification and recertification reviews that are already being conducted by Utilization Review. Duplicated efforts are wasted time and an unnecessary expense to the command.

2. Training/Certification for all UR/UM Reviewers in the Proper Application of Interqual ISD-A Standards on Admission Reviews

Using a tool such as the Interqual ISD-A criteria sets is no different than operating a piece of machinery - one must be properly trained in order to have it perform optimally. Reviewing the data collection sheets that the UM/UR reviewers used in the data gathering process, only two individuals consistently identified inappropriate admissions, two identified inappropriate admissions on rare occasions, and two failed to identify any at all. These inconsistencies could be due to random chance, however it is most likely that this disparity is the result of inadequate training, thus affecting the reliability of the study. It would be appropriate to extend this training to Nursing Case Managers, and physicians as well.

3. Better Utilization of the Same Day Surgery/ Short Stay Unit

The potential impact of the Same Day Surgery (SDS) and/or the Short Stay Unit (SSU) on providing alternative access points for surgical and outpatient procedures could drastically reduce the number of inappropriate admissions and potentially avoidable days. Currently, over 90 percent of the patients undergoing surgery at NMCSD are processed for admission or surgery through the SDS unit. Once scheduled for an operative procedure by the respective clinic, the patient reports to the SDS preadmission area to complete required paperwork, have laboratory and/or radiology test conducted, and are interviewed by both nursing and anesthesia. Two days prior to surgery, the staff ensures that all data is in the

chart, and the day before admission, the nurse contacts the patient in order to provide last minute instructions and support.

On the day of surgery, the patient arrives and is assigned to one of the following predetermined categories:

1. Same Day Admission - After surgery, the patient will be recovered in the post anesthesia care unit (PACU) and then admitted to a ward for convalescence and nursing care.
2. Short Stay Unit - A "light-care" ward that allows for observation and minimal nursing intervention for up to 32 hours post-procedure.
3. Same Day Surgery - After release from the PACU, the patient returns to SDS for a minimal period of time. Discharged to home once vital signs are stable, fluids can be taken orally, and the patient is able to void.

The category, generally assigned by the patient's primary physician, depends on the type and extent of surgery performed, the likelihood of complications, and the degree of post operative care that will be required.

As identified in Table 6, procedures such as cardiac catheterization, angiogram and myelogram - all of which are performed as outpatient procedures in civilian hospitals - are currently being admitted as inpatients at NMCSD. These patients require monitoring for possible bleeding and cardiac arrhythmias for cardiac catheterization and some angiogram and for immobility for myelogram, for a two to eight hour time period post-procedure.

Assigning these patient to the SSU for recovery and observation purposes, as well as performing these procedures on an outpatient basis would be much more cost efficient for

NMCSD.

4. Physician Education and Collaboration

Physicians need to be involved and educated on the formulating of inappropriate admission policies and the potential implications of noncompliance with preadmission standards. Resources are becoming scarce in terms of the manner in which medicine is practiced in both the military and civilian sectors. Training in Interqual criteria as a part of the physicians continuing medical education requirements may be the best alternative in order to implement and sell the idea of cost control. Involving and/or seeking physician input, along with other members of the health care team, in establishing new programs or other protocols follows the principles of Total Quality Leadership and is the first step to an overall collaborative problem solving approach and in obtaining consensus.

Recommendations

1. Incorporate the Nursing Case Managers, Utilization Management and the Third Party Collections Nurse under One Department.

Nursing case managers currently have established positions with the potential to be instrumental in any care decisions made for their patients. Examining the job descriptions for the precertification nurses, the only factor not being performed by the nursing case managers or the third party collection nurse is review of the Interqual ISD-A standards for admission appropriateness. This can and should be done during initial patient assessment prior to actual admission and can potentially decrease the need for early admission and or potentially avoidable days. Identifying patient needs, consulting with the appropriate ancillary services, providing and/or arranging patient education, referring as necessary, etc., for both inpatients

and outpatients, case managers are in the best position to make these judgements consistently. Because NCMs, UM reviewers and the TPC nurse have overlapping duties, placing them under the same department (i.e. Nursing Services Human Resources), can possibly enhance communication and efficiency. Nursing case management and admissions scheduling will undoubtedly contribute to cost containment efforts as well, but not without first controlling admissions for those who do not qualify for inpatient care. Hospital Corpsmen and/or clerical personnel in the SDS/SSU, emergency room and admitting office can be trained in the use of Interqual criteria and could perform screening prior to the patient being admitted. The decision will most likely negate the need for hiring preadmission certification nurses. Further study will show whether an increase in nursing case managers is needed, or the creation of "assistant case manager" positions would ease the administrative burden.

2. Reduce Third Party "Rebates" for Services with High Numbers of Inappropriate Admissions/Potentially Avoidable Days

NMCSD provides "rebates" as an incentive to the different admitting services that identify patients with billable TPI and code the services provided correctly, by returning a percentage of the money collected from TPI to the services operating budget. Inappropriate admissions and potentially avoidable days do not get reimbursed by TPI, these patients end up costing NMCSD more money. Directors of the various services who do not monitor their services compliance with Interqual ISD-A guidelines, could find their "rebates" significantly reduced, allowing for those services who maintain compliance to be rewarded.

3. Seek Alternatives to Early Admissions and the Granting of Special Liberty

The military health care environment is unique from our civilian counterparts in the

sense that we often admit patients out of convenience, rather than necessity. This occurs primarily with the young and otherwise healthy active duty member who ends up as an inpatient rather than being returned to his/her ship or barracks. These admissions are sometimes necessary in order to limit exposure of contagious diseases to fellow active duty members, thus maintaining operational readiness, or for convenience when no one can care for the member otherwise. There is almost always no third party payor involved with active duty care, so justification of the admission is not necessary in these regards. Unfortunately this practice is all too common among the other beneficiary categories as well and was actually encouraged prior to 1990 when the funding of MTFs was based upon overall occupied bed days each fiscal year.

As noted, many patients are admitted from one to several days early for surgery and/or workup. This has been significantly attributed to elderly patients and trends noted for patients stationed or living more than 50 miles from NMCSD. Military hospitals can no longer serve as a hotel. It is too costly and there is no reimbursement. Contractual arrangements (including transportation) for active duty at area Bachelor Officer/Enlisted Quarters (BOQ/BEQs) as well as possible reduced rate contracts made with area hotels for out of town dependents/retirees. Individuals or the active duty member's command - not NMCSD - would be responsible for lodging expenditures. This would end the practice of admitting patients early and granting special liberty. This same type of arrangement could be established for the out of town beneficiary requiring a workup that could be conducted on an outpatient basis. Responsibility must be shared by the beneficiary to ensure efficiency in health care delivery. If one wishes to obtain "free" medical care, the rules are followed -

otherwise, the beneficiary is responsible for any out of pocket expenses.

Implications for Future Research

The primary intent of examining variables that may influence the appropriateness of admissions was to establish baseline data for future studies. This has been accomplished. It has been shown that increasing age does impact on the increased number of inappropriate admissions and potentially avoidable days, and now further study is indicated in order to identify potential alternatives. One possible follow-on study may be to look at what types of inappropriate admissions "feed" into different diagnoses or case types that are needed or desired for fellowship and/or graduate medical education programs.

If training in Interqual criteria is provided for physicians as a part of meeting CME requirements, conducting a "pre/post test analysis" of admission scenarios may show whether such training has any impact on changing the admission behavior of physicians. Training may be conducted during internship or residency with testing to be done at established intervals. Staff physicians must also be trained and support the the criteria as well.

The proposed admissions scheduling system study to be conducted as a joint venture by VA/DoD, shows tremendous possibility of disallowing many admissions and potential avoidable days because of the criteria preestablished in the computer database. When census fluctuations occur in an uncontrolled and unpredictable manner (as displayed in Appendix C), it is difficult to plan the most efficient use of resources. Controlling admissions through a preadmission certification program will not only limit the variances currently experienced, but perhaps more importantly, will help NMCSD collect payments from third party payers in a more consistent and efficient manner. At present, the study is being piloted at Wright

Patterson AFB and a VA Hospital in central Ohio. Pending the initial results, NMCSD is still scheduled for a site visit in the summer of 1994 by the researchers heading up the program.

It has been determined in this study that the statistical significance of admitting services impact on the inappropriateness of admissions was most likely due to Type I error, a more focused review can be performed which could look more specifically at individual services. A larger sample reviewed by UM personnel who have been trained and certified in Interqual ISD-A standards may provide more significant results. This still may not identify any significant correlations because of the potential positive impact by nurse case managers and/or the implementation of an admissions scheduling system.

Tracking both third party collections and potentially avoidable days should continue as both functions directly impact NMCSD's operating budget. Data can be monitored and trends tracked with continuous improvement as the goal. In the likely event that DoD MTFs are funded by capitation - a set dollar amount allotted for each identified or enrolled eligible beneficiary - this data will become crucial. If cost savings relative to implementing a preadmission certification program can be demonstrated, this pilot study will not only benefit Naval Medical Center, San Diego, but can be employed by other military health care facilities as well.

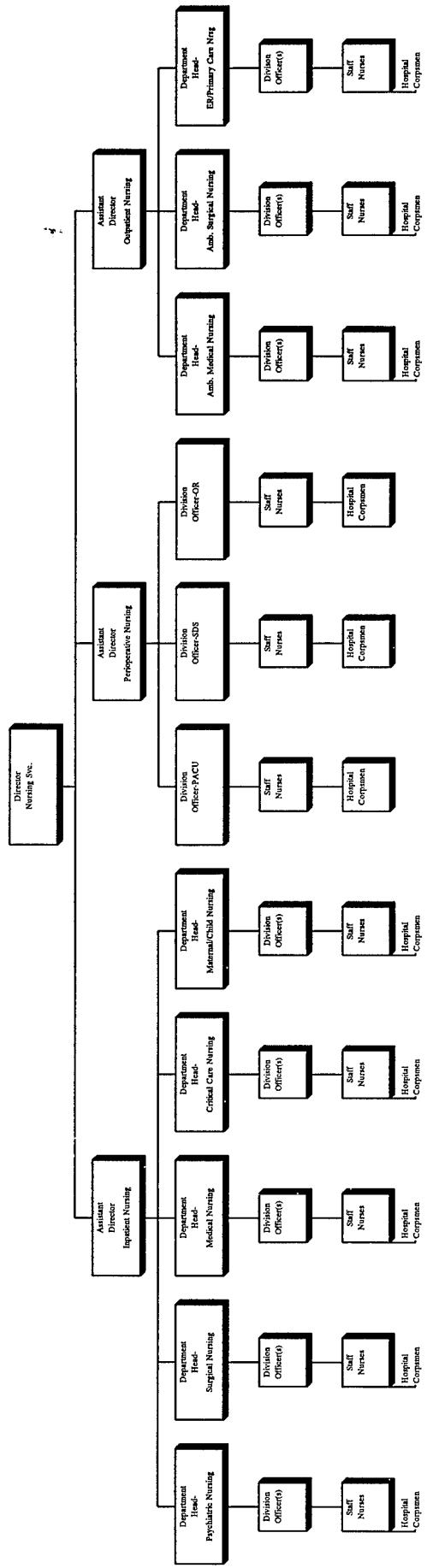
Regardless of whether President Clinton's health reform bill passes in Congress, the country will continue to see changes in how health care is delivered. It is an established fact that health care for the elderly will be a major concern in the 21st century. This graduate management project has lent some credence to the proposition that health care delivery to the

elderly population is inefficient, thus encouraging further research in this area. Conversely, we must consider whether health care administrators and providers will be forced to forego the compassion shown the elderly population (allowing for social, personal and physical needs to be met by keeping hospitalized longer than DRGs or Interqual ISD-A standards allow) in order to maintain financial solvency? Many ethical dilemmas have yet to be faced in order for this country to achieve the desired outcomes of access to affordable quality health care for all. It is the hope that the conclusions and recommendations that were offered in this study will be considered when ultimately choosing the "best" health care reform package for the people of the United States .

APPENDIX A

ORGANIZATION OF NURSING SERVICES

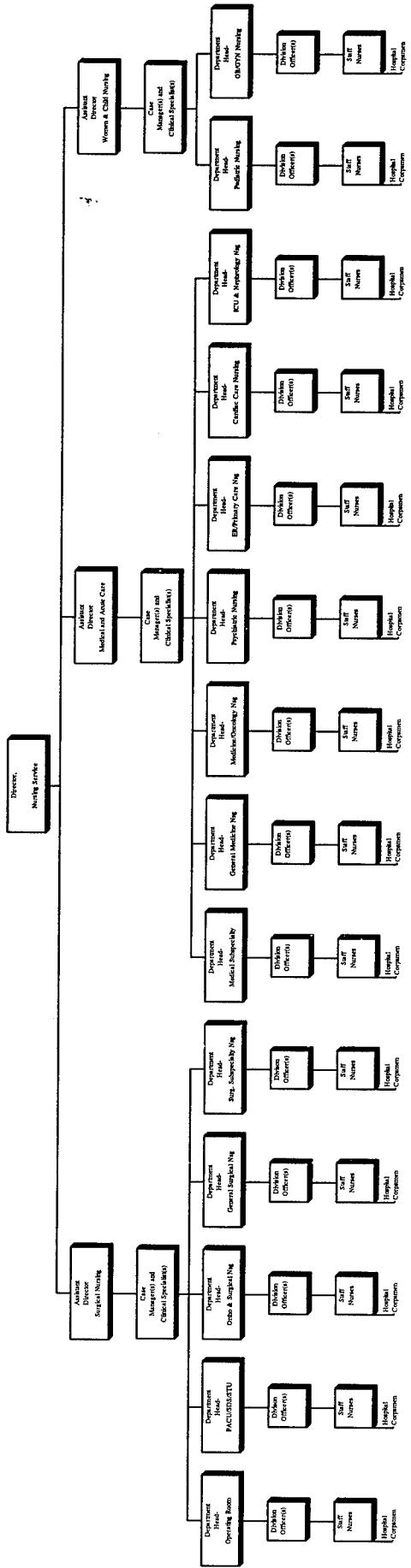
Organization of Nursing Services



APPENDIX B

REORGANIZATION OF NURSING SERVICES

Reorganization of Nursing Services Naval Medical Center, San Diego

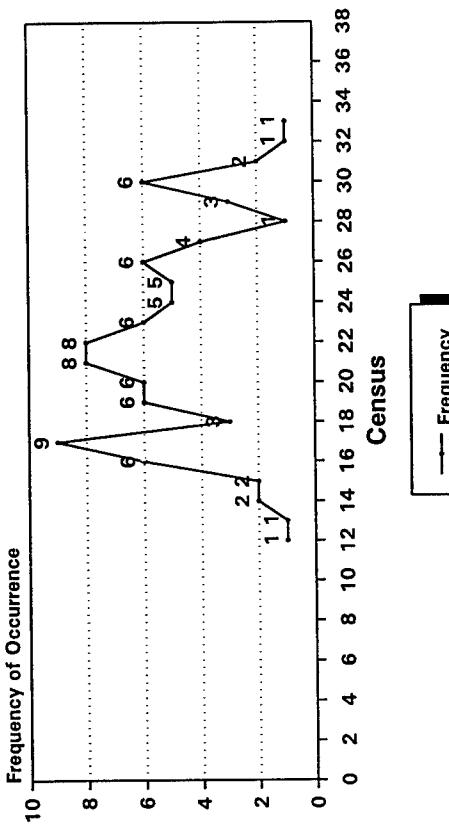


APPENDIX C

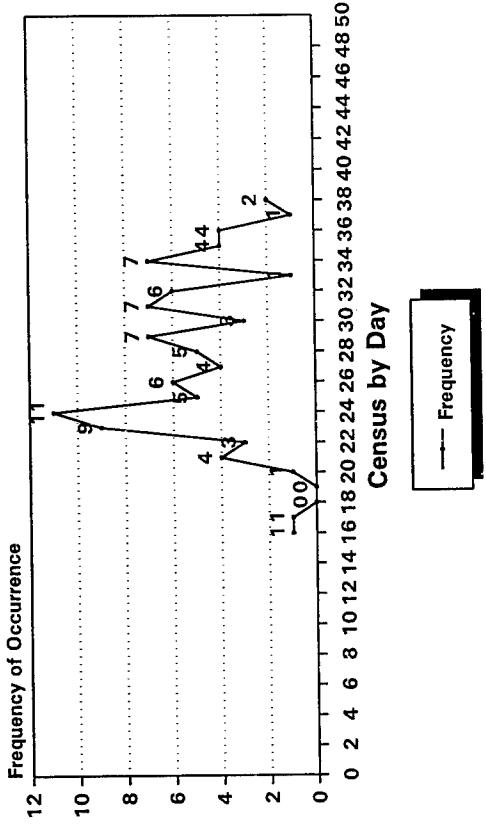
CENSUS AND DESCRIPTIVE STATISTICS OF 3 RANDOMLY SELECTED WARDS

JUNE - AUGUST 1993

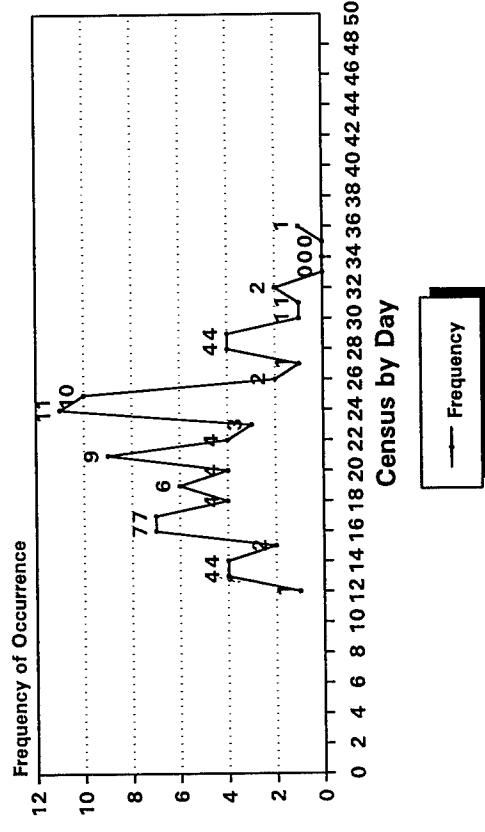
Census Frequency Ward A



Census Frequency Ward B



Census Frequency Ward C



Descriptive Statistics - Census June - August 1993

Ward A	Ward B	Ward C
N = 92 cases (days)	N = 92 cases (days)	N = 92 cases (days)
Range = 21 (12 - 33)	Range = 22 (16 - 38)	Range = 24 (12 - 36)
Mean = 22.098	Mean = 27.967	Mean = 21.467
Median = 22.000	Median = 28.000	Median = 21.000
Mode = 17.000	Mode = 24.000	Mode = 24.000
Std. Error = 0.512	Std. Error = 0.524	Std. Error = 0.535
Std. Dev. = 4.915	Std. Dev. = 5.022	Std. Dev. = 5.132
Variance = 24.155	Variance = 25.219	Variance = 26.340

Total Census = 2033 Total Census = 2573 Total Census = 1975

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